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MODULAR BALLISTIC WALL

TO THE COMMISSIONER OF PATENTS AND TRADEMARKS:

Your petitioners, Kyle Bateman and David Bassett, citizens of the United States and residents of Provo, Utah and Springville, Utah, respectively, pray that letters patent may be granted to them as inventors of the improvement in a Modular Ballistic Wall as set forth in the following specification..

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BACKGROUND OF THE INVENTION

1. Related Application

The present application claims the benefit of U.S. Provisional Application 60/395,540 which is expressly incorporated herein.

2. Field of the Invention

[0001] The present invention relates to a modular ballistic wall for decelerating projectiles. More specifically, the present invention relates to a wall which may be used in shoot houses, baffles, and the like, for safely decelerating projectiles.

3. State of the Art

[0002] In order to maintain proficiency in the use of firearms, it is common for law enforcement officers and sportsmen to engage in target practice. While target practice has traditionally been conducted on a range in which targets were placed a distance away from the shooter, many have realized that such a scenario does not adequately train officers for many real life situations. For example, a substantial percentage of the police officers who are killed each year are killed within fifteen feet of the perpetrator. Many are killed within five feet - often within the confines of a house or other building.

[0003] In order to better train police officers, many began building ballistic walls in arrangements to resemble a house or other building. These structures, typically referred to as shoot houses, enabled police officers to train in situations in which

the officer faces realistic threats to their safety.

[0004] Shoot houses were originally constructed out of a concrete, gravel filled walls, or tire walls. While these shoot houses provided a marked improvement over traditional training, they still do not feel as realistic as conventional looking walls.

[0004] A significant improvement in shoot houses was achieved with the invention of modular shoot house walls in plates of steel were attached together in a ballistically sound manner and then covered by a frame. The frame typically had two-by-fours attached to a facing strips that held the plates together, and pieces of plywood that connected the two-by-fours. A more detailed description of a preferred construction of the shoot house is set forth in U.S. Patent No. 5,822,936.

[0005] When the plywood was painted, the shoot house looked very similar to a conventional home with the roof removed. In such a shoot house, the officer is able to train in a ballistically safe environment that closely resembles what may be the most dangerous scenario that he will face.

[0006] While U.S. Patent No. 5,822,936 teaches that a preferred embodiment of the invention avoids the necessity of cutting holes in the plate, some have insisted that the bolts which hold the facing and backing strips to the plates extend through the plates.

This is due to an erroneous understanding perpetuated by some that the clamping of the facing and backing strips together against the plates leaves the wall prone to separation.

[0007] The disadvantage of cutting holes in the plates is that each time the cutting torch is turned off, there is an associated cost. In order to properly secure the plates and prevent bullet fragments from passing through joints in the wall, as many as eight attachment points should be used. Thus, even if the cost associated with turning off and on the torch is only \$0.20, the cost associated with a single plate can be several dollars.

[0008] Thus, there is a need to form a modular ballistic wall which does not have the associated costs of repeatedly turning off the cutting torch, while providing the perceived benefit of the attachment bolts going through the plates.

[0009] Another problem which is present in some modular shoot houses is the method by which the two-by-fours are attached to the facing strips. In one currently marketed arrangement, the two-by-fours are drilled and the attachment bolts extend through the two-by-fours, the facing strip, the plates and the backing strip. Such an arrangement is fundamentally flawed. As bullets impact the two-by-four adjacent the bolts, the two-by-four will be damaged by each round. Over time the support given to the bolt by the two-by-four

will decrease and the bolt will become loose. Once the bolt is able to move, the facing and backing strips are no longer held securely against the plate and the risk that a bullet or bullet fragment will pass through the seam between the plates increases significantly.

[0010] The risks associate with loose bolts can be avoided by making sure that a substantial number of the attachment bolts hold the facing and backing strips together without passing through the two-by-four. Such a situation, however, still raises the concern that the two-by-fours must be milled or otherwise handled so that the holes for the bolts can be drilled therein. This usually results in the wood being shipped to the job site from the same location as the metal plates, facing strip, etc. If drilling holes in the wood can be avoided, the wood can be purchased at a hardware store close to the site at which the range is being built. This can significantly decrease costs depending on the location of the shoot house.

[0011] Thus, there is needed an improved mechanism for attaching a wood or other containment frame to the facing strips. Ideally, such a mechanism would not use attachment bolts used to secure the facing strip and backing strip to the metal plates.

SUMMARY OF THE INVENTION

[0012] It is an object of the present invention to provide an improved modular ballistic wall.

[0013] It is another object of the invention to provide such a modular ballistic wall which is relatively inexpensive to construct and relatively easy to assemble.

[0014] In accordance with the above and other objects of the invention a modular ballistic wall is disclosed which includes a plurality of metal plates, facing strips and backing strips (or similar structure) which are connected together to prevent bullets from passing through the wall.

[0015] In accordance with one aspect of the invention, the plates have keyholes formed therein for receiving bolts so that the bolts pass through the hole in the plates. The use of keyholes eliminates the cost associated with turning a cutting torch off and on repeatedly. By using keyholes, it has been found that more holes can be formed in the plate at the same price. This allows for more attachment locations along the plates, and thereby reduces the risk of a bullet passing through the seam.

[0016] In accordance with another aspect of the invention, the bullet containment frame is attached to the facing strips without the need for bolts to extend through the frame. In one preferred

embodiment of this aspect of the invention, the facing strip is formed with a channel for receiving a two-by-four or similar frame member. The two-by-four is attached directly to the facing strip. This, in turn, prevents the bolts from being loosened in the event that the two-by-four is damaged by bullets.

[0017] Another advantage associated with this configuration is that the facing strip and/or backing strip can be formed as a load bearing structure. This enables a second story of a shoot house, ballistic plates or a roof to be added to the shoot house without requiring additional supporting structure as is commonly required with current shoot house embodiments.

[0018] In accordance with another aspect of the present invention, the two-by-four, etc., is attached to the facing strip by an attachment bracket which is attached to the facing strip. The bracket can be disposed either on the inside or the outside of the facing strip and extend into an engagement with the two-by-four.

BRIEF DESCRIPTION OF THE DRAWINGS

[0019] The above and other objects, features and advantages of the invention will become apparent from a consideration of the following detailed description presented in connection with the accompanying drawings in which:

[0020] FIG. 1 shows two metallic plates and attachment structures for forming a ballistic wall made in accordance with the principles of the present invention;

[0021] FIG. 1A shows a close-up view of a portion of one of the plates of FIG. 1;

[0022] FIG. 2, shows a cross-sectional view of the joint of FIG. 1 assembled with a bullet containment frame attached thereto;

[0023] FIG. 3 shows a cross-sectional view of a joint similar to that shown in FIG. 2, but with an alternate embodiment of an attachment mechanism for the bullet containment frame and the ballistic wall;

[0024] FIG. 3A shows a cross-sectional view of a joint made in accordance with the prior art which has been impacted by bullets;

[0025] FIG. 3B shows a side view of a modular ballistic wall made in accordance with the principles of the present invention;

[0026] FIG. 4 shows a cross-sectional view similar to that shown in FIG. 3, but with the bracket mounted inside the facing strip;

[0027] FIG. 5 shows a cross-sectional view of another attachment mechanism for connecting the facing strip to the bullet containment frame;

[0028] FIG. 6 shows a cross-sectional view of yet another attachment mechanism for connecting the facing strip to the bullet

containment frame;

[0029] FIG. 7 shows a cross-sectional view of yet another embodiment of a modular ballistic wall in accordance with principles of the present invention; and

[0030] FIGs. 8A through 8D show cross-sectional views of other attachment configurations in accordance with the principles of the present invention.

DETAILED DESCRIPTION

[0031] Reference will now be made to the drawings in which the various elements of the present invention will be given numeral designations and in which the invention will be discussed so as to enable one skilled in the art to make and use the invention. It is to be understood that the following description is only exemplary of the principles of the present invention, and should not be viewed as narrowing the pending claims.

[0032] Referring to FIG. 1, there is a disassembled portion of a ballistic wall, generally indicated at 100, made in accordance with the principles of the present invention. The ballistic wall 100 includes a pair of plates 104 and 108 which, as will be discussed in detail below, are attached together by a facing strip 112 and a backing strip 116 which clamp toward one another and prevent

bullets from passing through the seam between the plates. Also shown in FIG. 1 is a plurality of bolts 120 and nuts 124.

[0033] To assemble the ballistic wall 100, the facing strip 112 and the backing strip 116 are placed so that holes 132 and 136 therein are in alignment with holes 134 and 138 on the plates. (To maintain simplicity in the drawings, only one hole on each plate is numbered. It will be understood that all of the holes are preferably in alignment, etc.).

[0034] When the bolts 120 pass through holes 132, 134, 136 and 138 and the nut 124 is tightened, the facing strip 112 and the backing strip 114 clamp together against the plates 104 and 108. A cross-sectional view of a completed joint is shown in FIG. 2. Provided that sufficient nuts 124 and bolts 120 are used and the nuts are properly tightened, a highly secure joint is formed which prevents bullets from passing from one side of the plates 104 and 108 to the other.

[0035] One problem which is presented by the plates 104 and 108 is forming the hole 134 or 138. In order to make a truly bullet resistant joint, it is important to use hardened steel. Hardened steel, however, is extremely difficult to drill. Thus, if holes are to be formed in the plates, they must typically be cut with a cutting torch. While improvements in cutting torch technology have

decreased the costs of cutting holes, each time the cutting torch is turned off and on there is an associated cost.

[0036] Turning now to FIG. 1A, there is shown a solution to forming holes in the plates 104 and 108. Rather than forming a conventional hole, holes 134 and 138 are preferably formed as a keyhole. The cutting torch generally starts from the side 104a of the plate and cuts a thin slot 140 in the plate. The slot is preferably about 0.125 inches or less.

[0037] The slot 140 can extend into the plate any desired length. However, it is presently preferred that the slot extend into the plate about 1 inch. At the end of the slot 140, hole 134 is cut. The cutting torch then remains on and travels out through the slot 140. The cutting torch continues along the side 104a until it reaches the location for the next hole, where it cuts another slot 140' and another hole 134'. It has been found in accordance with the present invention that keeping the cutting torch on and cutting keyhole configurations substantially reduces the costs of cutting the holes 134 in the plate 104. Thus, the plates 104 and 108 can be formed more cost effectively, keeping down the cost of modular ballistic wall.

[0038] Because the slot 140 is about one inch long, the risk of the metal deforming and the bolt being pulled out through the slot

140 is virtually nonexistent. Furthermore, the plates 104 and 108 are held in fixed relationship to one another by the clamping action of the facing strip 112 and backing strip 116 which are clamped together by the bolts 120 and nuts 124. Thus, the configuration shown in FIGs. 1 through 2 achieves all of the advantages of a conventional through-hole design, at a lower price.

[0039] Turning now to FIG. 3, there is shown another embodiment of the invention. The modular ballistic wall, generally indicated at 150, includes a pair of plates 104 and 108 which are attached together by a facing strip 112 and backing strip 116 and bolts 120 which extend through the facing strip, the plates and the backing strip and are secured by the nuts 124.

[0040] Attached to the facing strip 112 is a mounting bracket 154. Typically, the attachment of the mounting bracket 154 to the facing strip is accomplished by the bolts 120 which extend through holes in the mounting bracket prior to passing through the facing strip. The mounting bracket 154 is typically made of tin or some other metal, although plastic or other sufficiently durable materials can be used.

[0041] The mounting bracket 154 is also attached to a bullet containment frame, generally indicated at 160. The bullet containment frame 160 typically includes a wood post, such as a

two-by-four 164 which is attached to the mounting bracket 154. When the mounting bracket 154 is made from tin or some other relatively pliable material, the two-by-four 164 can be attached by simply driving a fastener 168, such as screws or nails, etc., through the mounting bracket 154 and into the two-by-four. If desired, the mounting bracket 154 can have preformed holes through which the fasteners may be driven. In the alternative, the fasteners can simply be driven through the tin, etc., of the mounting bracket.

[0042] The bullet containment frame 160 also includes boards 172 of material, such as plywood, sheet rock and/or acoustic tiles, which are attached to the two-by-fours 164. The boards 172 are also attached by fasteners 176, such as screws, nails, or staples.

[0043] When a bullet is fired at the modular ballistic wall 150, it passes through the boards 172 and impacts against the plates 104 and 108. Because the bolts 120 and nuts 124 securely clamp the facing strip 112 and the backing strip 116 against the ends of the plate 104 and 108, a bullet is unable to pass between the plates and injure a person on the other side.

[0044] Turning momentarily to the FIG. 3A, there is shown a cross-sectional view of a prior art configuration for a ballistic wall. The ballistic wall, generally indicated at 180, includes a

pair of plates 182 and 184 which are held together by a facing strip 186 and a backing strip 188 which are clamped together by bolts 190 and nuts 192. In addition to the facing strip 186 and backing strip 188 and the plates 182 and 184, the bolts also pass through two-by-fours 194 disposed outside of the facing and backing strips. The two-by-fours 194 are also attached to pieces of plywood 196.

[0045] During use, bullets will pass through the plywood 196 and will typically impact the plates 182. Frequently, however, a bullet will impact the two-by-four 194, thereby fragmenting portions of the two-by-four. When this happens around the bolt 190, or the nut 192, the bolt no longer securely clamps the facing strip 186 and the backing strip 188 toward each other. Furthermore, such a configuration exposes the ends of the bolts to damage by bullets. Once the facing strip and backing strip 186 and 188 no longer securely clamp against the plates, joint tends to open under the weight of the plates and the risk that a bullet fragment may pass between the plates increases significantly. Some shoot houses constructed in accordance with the prior art have been seen which have a half-inch or more gap between the facing strip and the plates.

[0046] The configuration shown in FIG. 3 resolves these concerns.

Even if the two-by-four 164 were to be completely destroyed at a particular location, the damage to the two-by-four would have no impact on the bolts 120 and nuts 124 which clamp the facing strips 112 and backing strips 116 against the plates. To the contrary, the bolts are covered by the two-by-four, minimizing the risk that they will be damaged. Additionally, because fasteners 168 can be punched through the mounting bracket 154, numerous fasteners can be used, thereby ensuring against separation of the two-by-four 164 from the mounting bracket.

[0047] In addition to the benefit of increased safety obtained by the configuration in FIG. 3, an additional benefit of cost reduction is also achieved. The use of the mounting bracket 154 eliminates the need to process lumber. In the prior art configuration, the pieces of two-by-four must either be pre-drilled at the factory or drilled by hand in the field. Using the mounting bracket avoids the necessity of pre-drilling the two-by-fours. It also facilitates the purchase of the two-by-fours from local sources. Those skilled in the art will appreciate that purchasing lumber locally can reduce transportation costs and eliminates problems due to an insufficient number of two-by-fours being shipped.

[0048] Turning now to FIG. 3B, there is shown a side view of a

portion of a modular ballistic wall, generally indicated at 150', formed in accordance with the principles of the present invention. The ballistic wall 150' includes plates (only plate 104 of which is shown) held together by a facing strip 112 and a backing strip 116. Attached to the facing strip 112 is a mounting bracket 154 which is formed as one elongate piece which extends substantially the length of the facing strip. A plurality of mounting brackets 154' are attached to the backing strip 116. Each of the mounting brackets 154' is typically held on by a single pair of bolts. Some of the mounting brackets 154' are pre-drilled with holes 156 for receiving fasteners, preferably screws. The mounting bracket 154 may also be pre-drilled with holes 156, or fasteners may simply be driven through the wall of the mounting bracket.

[0049] FIG. 4 shows an alternate embodiment of the present invention which is similar to that shown in FIG. 3 and is numbered accordingly. Instead of having the mounting bracket 154 attached on the outside of the facing strip 112, the mounting bracket is disposed between the facing strip 112 and the plates 104 and 108 and then extends outwardly to engage the bullet containment frame 160'. (It should be appreciated throughout the present disclosure that references to the facing strip and the backing strip and any attachments thereto may be interchanged as either or both sides of

the plates may be used to form a ballistic wall for a shoot house, etc.)

[0050] Turning now to FIG. 5, there is shown an alternate embodiment of the invention. The ballistic wall, generally indicated at 200, includes a plurality of plates 204 and 208. The plates 204 and 208 are held together by a facing strip 212 and a backing strip 216 clamped toward each other by a pair of bolts 220 and nuts 222 in a similar manner to that described above.

[0051] Unlike the embodiment discussed in FIGs. 3 and 3B, the ballistic wall 200 does not have an independent mounting bracket. Rather, the mounting bracket 216a is formed integrally with the facing strip 216. Thus, the facing strip 216 preferably has a generally U-shaped cross-section.

[0052] The facing strip 216 may have a consistent thickness throughout, or the arms which form the mounting bracket 216a portion of the facing strip may be thinner. If the arms are not substantially thinner, it will generally be very difficult to drive a fastener through the arms of the facing strip. Thus, it is preferred in such a configuration that holes 218 be formed in the arms to allow attachment of the bullet containment frame 160. The holes may be formed by various methods, but punching holes is presently preferred.

[0053] In addition to avoiding the need for a separate attachment bracket, the facing strip 216 shown in FIG. 4 has the advantage that the facing strip can be used for structural support. Shoot houses are often built in locations in which weather can interfere with use of the house. To resolve these concerns, it is common to build a roof above the shoot house. However, a separate support structure is usually required. Likewise, many ranges have decks above the shoot house where instructors can observe the shooter for training purposes. By using facing strips 216 which can also serve as structural support, the need for a separate support structure is eliminated.

[0054] FIG. 6 shows yet another embodiment of a modular ballistic wall, generally indicated at 250, made in accordance with aspects of the present invention. The modular ballistic wall includes a pair of plates 254 and 258 which are juxtaposed so that lateral edges of the plates form a joint. The plates 254 and 258 are held together by a facing plate 262 and a backing plate 266, which clamp against the edges of the plates due to bolts 270 and nuts 272 extending therethrough.

[0055] The facing plate 262 is different from the facing plates described with respect to FIGs. 3 through 5 in that the facing plate has an arm 262a which extends away from a base portion 262b

(i.e. the portion which abuts the plates) and which supports a mounting portion 216c for attachment to the bullet containment frame 160'. The bullet containment frame 160' is shown without the use of a wood post, such as a two-by-four. However, a two-by-four, etc. could be attached to the mounting portion 216c. as part of the bullet containment frame.

[0056] Those skilled in the art will appreciate that the facing plate 262 can be formed as an I beam, in which case attachment holes would typically be formed in the mounting portion 216c, or could be formed so that the mounting portion was sufficiently thin that fasteners could be driven through the metal, etc., used to form the mounting portion.

[0057] Turning now to FIG. 7, there is shown a cross-sectional view of yet another modular ballistic wall, generally indicated at 300, formed in accordance with the principles of the present invention. The modular ballistic wall 300 includes a pair of metal plates 304 and 308 which are attached together by a facing strip 312 and a backing strip 316 which are clamped together by bolts 320 and nuts 324.

[0058] A bullet containment frame, generally indicated at 340, is attached to the facing strip 312 by the bolts 320. The containment frame 340 includes a generally hollow post, such as a tin stud 344.

A pair of boards 348 are attached to the stud 344 by fasteners 352 such as screws, etc. Additionally, the hollow stud can be filled with a bullet deceleration medium 356, such as gravel or chopped rubber. If needed, the stud 344 can have grooves formed therein to allow portions of the stud to be slid between the heads of the bolts 320 and the facing strip 312 prior to tightening of the bolts.

[0059] FIGs. 8A through 8D show still further embodiments of the invention. For example, a joint, generally indicated at 400, is made between three plates 404, 408 and 412. The plates are assembled so as to form the corner of two rooms on one side and a single room or hallway on the other.

[0060] The plates are connected by a plurality of facing/backing strip. Those skilled in the art will appreciate that the facing strip is typically used to reference the strip on the side of the shooter, while the backing strip is disposed on the side of the plates 404, 408, 412 opposite the shooter. Thus, a facing strip may also be a backing strip, and vice versa, when viewed from the opposite side of the wall.

[0061] Facing strip 420 and 422 are formed with an L-shaped cross-section so as to enable plate 404 to be held at a 90 degree angle from plates 408 and 412, respectively. Facing strip 424 is

generally flat to connect the plates 408 and 412 together. The facing strips 420, 422, 424 are drawn toward the backing strips opposite the plates. Thus, for example, tightening the nuts 426 on bolts 428 drawings the facing strip 424 towards its backing strips (facing strips 420 and 422). Which also draws one of the backing strips (facing strip 424) toward each of the facing strips 420 and 422. Tightening the other nut 426a and bolt 428a likewise drawings the facing strips 420 and 422 toward their respective backing strips (facing strips 422 and 420, respectively).

[0062] One advantage of the configuration shown in FIG. 8A is that the wall formed around plate 404 can be exactly 4 feet on center. This can reduce the cost of materials, as most sheets of material, whether steel or plywood, can be purchased in 4 foot increments.

[0063] Each of the facing strips 420, 422 and 424 is attached to a mounting bracket 430, 432 and 434 respectively. Mounting brackets 430 and 432 form a generally L-shaped recess which can receive a two-by-four 436 and a two-by-two 438 for mounting the boards 440 of plywood, sheet rock, etc. With the mounting brackets 430 and 432 attached to the facing strips 420 and 422, the two-by-fours 436 and two-by-twos 438 can be readily attached by driving a screw through the mounting bracket (or through a hole therein).

Once the two-by-fours 436 and two-by-twos 438 are in place, it is relatively easy to attach the boards 440 forming the exterior of the bullet containment frame.

[0064] Unlike the L-shaped facing strips 420 and 422, facing strip 424 is generally flat. Thus, the mounting bracket is U-shaped to receive a two-by-four 436, and the attached boards 440.

[0065] In such a configuration, a joint can be formed which, from the exterior, resembles a wall of a house. The joint is easy to assemble, and avoids the need for pre-drilled lumber and awkward mounting structures for securing the boards 440 which form the exterior of the modular ballistic wall. Additionally, the posts (two-by-fours and two-by-twos) are secured to each plate via the mounting brackets 430, 432, and 344, thereby minimizing the risk of the posts and/or boards pulling away from the metal plates. In the prior art embodiment discussed in FIG. 3, the boards occasionally pulled away from the metal plates. Of course, if the boards pull away sufficiently, a shooter or observer could be hit by a ricochet which fails to impact the boards.

[0066] Turning to FIG. 8B, there is shown an alternate embodiment of the invention. The modular ballistic wall, generally indicated at 450, includes a pair of steel plates 454 and 458. The steel plates 454 and 458 are held together by strips 462 and 466. Strips

462 and 466 serve as facing strips and backing strips depending on the direction of fire. For example, if a shooter were firing from the bottom of the page, strip 466 would form a facing strip, while strip 462 would serve as a backing strip. Regardless of which a strip is called, the fundamental purpose of the strips is to clamp against the ends of the plates and to prevent bullets from passing through the seam formed by the plates.

[0067] Facing strip 462 is formed from a piece of metal having a generally U-shaped cross-section with two arms 462a which form a channel for receiving the post, two-by-four 470. The arms 462 are pre-drilled with holes 474 to facilitate placement of fasteners, screws 478 into the two-by-four 470 to secure the bullet containment frame, generally indicated at 480, to the facing strip 462. The boards 484 are also attached to the two-by-four 470 by fasteners, such as screws 488.

[0068] On the opposing side, the bullet containment frame, generally indicated at 480', is attached a mounting bracket 468 by a plurality of fasteners, such as screws 478. The mounting bracket 468 is, in turn, secured to the facing strip 466 by the bolts 484 which clamp the strips 466 and 462 toward one another and against the plates 454 and 458. In either the configuration used to attach bullet containment frame 480 or bullet containment frame 480', the

two-by-four 470 can be virtually pulverized without affecting the joint formed by the strips 466 and 462 clamping against the plates 454 and 458. Thus, the risk that a bullet or bullet fragment will pass between the plates is virtually eliminated.

[0069] The embodiment shown in FIG. 8B has the additional advantage that facing strip 462 forms a support structure which can be used to support overhead walkways, a roof, etc. above the modular ballistic wall 450. This eliminates the need for a separate support structure as is commonly used with prior art configurations.

[0070] FIG. 8C shows yet another configuration made in accordance with the present invention. The modular ballistic wall, generally indicated at 500, includes a plurality of metal plates 502, 504, 506 and 508, which are preferably made from plate steel. Each plate 502, 504, 506 and 508 is attached to two of the other plates by facing strips 512. Each of the facing strips 512 also is a backing strip for two of the other facing strips depending on the angle of fire.

[0070] Bolts 516 and nuts 518 are used to attach the facing strips 512 so that they clamp against the plates 502, 504, 506 and 508 and form a bullet resistant joint. A bullet containment frame, generally indicated at 530, is formed by boards 534, typically

plywood, which are attached to support posts, two-by-fours 536 and two-by-twos 538, by fasteners 540, such as screws, nails, staples, etc. The support posts are, in turn, attached by fasteners 554 to mounting brackets 550 which are attached to the facing strips 512 by the bolts 516 and nuts 518.

[0071] While the facing strips and mounting brackets described herein form extremely effective bullet resistance joints, they can also be used to build additionally structures ancillary to construction of the shoot house. FIG. 8D shows the end of a wall as it might be configured for mounting a door. The structure includes a metal plate 600 having a facing strip 604 and a backing strip 608 attached thereto by a bolt 612 and nut 614. The tightening the nut 614 holds a mounting bracket 620 to the facing strip 604 so that a bullet containment frame, generally indicated at 624 can be attached thereto. As with previous embodiments, the bullet containment frame includes a post 628 attached to the mounting bracket 620, and boards 632 attached to the post.

[0072] Also shown in FIG. 8D is a fascia structure, generally indicated at 640. The fascia structure includes a pair of boards 644. One board is attached to the board 632 of the bullet containment frame 624 by a fastener, such as a screw 644. The other board 644a is attached by a fastener 648 to a support post

650, which is attached a mounting bracket 654, which is bolted to the backing strip 608. The two boards 644 and 644a are also attached together by a fastener. In such a manner, a fascia can be created, such as is used to mount a door, etc., without the need for any milled lumber. (As used herein milled lumber is lumber which has had holes formed therethrough for mounting to the facing strip, etc., whereas as used herein unmilled means that the lumber lacks attachment holes extending therethrough.) In fact, all of the lumber used as shown herein can be purchased from local hardware stores, thereby saving transportation costs. Furthermore, the method of attaching the lumber to the steel plates provides for a safer shoot house, etc., as even repeated shots into the support posts will not loosen the joints.

Thus there is disclosed an improved apparatus and method for forming a modular ballistic wall. Those skilled in the art will appreciate numerous modifications which can be made without departing from the scope and spirit of the present invention. For example, rather than screws or nails, other fasteners such as straps, or rivets could be used. The appended claims are intended to cover such modifications.